SVKM's
D. J. Sanghvi College of Engineering

Program: B.Tech in Chemical Engineering **Academic Year: 2022** **Duration: 3 hours**
Date: 14.01.2023
Time: 10:30 am to 01:30 pm
Subject: Advanced Material Science (Semester V) **Marks: 75**

Instructions:

(1) All Questions are Compulsory.
(2) Assume suitable data wherever required, but justify it.
(3) All questions carry equal marks.
(4) Answer to each new question is to be started on a fresh page.
(5) Figure to the right indicate full marks.

Question No.		Max. Marks
Q1 (a)	write and discuss the factors affecting the choice of an engineering material and the corrosion resistance of the material	08
Q1 (b)	Explain the different causes of failure in stainless steel.	07
	OR	
Q1 (b)	write short note on different types of stainless steel and their compositions and applications.	07
Q2 (a)	Explain the structure and preparation of conducting polymers.	08
Q2 (b)	Write short notes on liquid crystal polymer(LCP).	07
	OR	
Q2 (b)	Write short notes on polyamide.	07
Q3 (a)	Explain about the classification of ceramics.	08
Q3 (b)	Explain Sialon processing of ceramics.	07
	OR	
Q3 (b)	Explain about the classification of corrosion.	07
Q4 (a)	Explain matrices and reinforcement of ceramic composites.	08
Q4 (b)	Explain sheet moulding compound process.	07
	OR	
Q4 (b)	Explain hard facing process for thin film coating.	07
Q5(a)	Explain chemical vapour deposition method for synthesis of carbon nanotubes.	08

Q5(b) Write properties and applications of carbon nanotubes. 07

OR

Q5(b) A metal corroding in an air free acid at an electro chemical corrosion rate of 1 $\frac{\mu A}{cm^2}$. It dissolves as 07

1) Ferrous iron

2) Ferric iron

A metal has a density of 7860Kg/m3. find its penetration rate in mpy, micrometer per year, mm/yr, nm/hr amd pm/sec.